

AMENDMENT ACCOMPANYING RCE

Serial No. 10/774,298

Docket No. VEL03-GN003

REMARKSStatus of the Application

Claims 1, 7-9, 11-15, 17, 18, 20, 22, 26, 29, 31-33, 48, 53, 54, 57, 58, 61, 62, 64, 66, 68-74, and 97-110 are pending. Claims 1, 7-9, 11-15, 17, 18, 20, 22, 26, 29, 31-33, 48, 53, 54, 58, 61, 62, 64, 66, and 68-74 have been amended herein. Claims 5, 6, 10, 16, 19, 21, 23, 24, 25, 27, 28, 30, 51, 55, 67, 75-90 are newly cancelled. Reconsideration of the application is respectfully requested.

Objections to the Claims

Claim 66 stands objected to as being dependent upon a canceled claim. Claim 66 has been amended herein to depend from claim 1, thus overcoming the objection. Withdrawal of the objection to claim 66 is respectfully requested.

Rejections Under 35 U.S.C. § 103Gonjo In View Of Reiser

Claims 1, 5, 6, 7-12, 16-31, 33, 51, 55, 57, 61, 62, 64, 66-70, and 74-90 stand rejected under 35 U.S.C. §103(a) as allegedly being obvious over U.S. Patent No. 6,159,434 to Gonjo et al. ("Gonjo") in view of United Kingdom Patent Application Publication No. 2 128 013 to Reiser ("Reiser"). It is respectfully submitted that the amendments to independent claims 1 and 17 herein overcome these rejections.¹

Claim 1

Claim 1 has been amended herein to require, *inter alia*, a first microchannel module mounted within the pressure vessel and including at least two sets of isolated microchannels. Gonjo does not teach a pressure vessel, and Reiser explicitly teaches away from isolated microchannels: "The fuel cell system of this invention, rather than attempting to prevent leakage, allows leakage."²

¹ Claims 5, 6, 10, 16, 19, 21, 23-25, 27, 28, 30, 51, 55, 67, 75-90 have been cancelled herein, thereby mooted their rejections.

² Gonjo, II. 53-54.

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In addition, claim 1 has been amended herein to require, *inter alia*, a hydrocarbon conduit extending through the pressure vessel wall and a fuel conduit extending through the pressure vessel wall. Neither Gonjo nor Reiser teaches these elements.

In addition to the deficiencies in the teachings of the references discussed above, the references are not properly combinable in the manner proposed in the final Office action. First, the final Office action states, "it would have been obvious to one of skill in the art at the time of the invention to add the pressure vessel and associated structure of Reiser, to the chemical process system of Gonjo in order to further prevent valuable reactants and products from leaking out of a chemical reactor."³ This reasoning is in direct conflict with the context of the references. Specifically, Gonjo was filed in 1997—14 years after Reiser. If leakage out of the reactor was a concern in the device of Gonjo, the inventors of Gonjo would have known of the teachings of Reiser and, had such a combination been obvious, would have incorporated Reiser's teachings. Instead, Gonjo teaches a construction that "ensur[es] the seal between the flat plate elements"⁴ and that does not incorporate a pressure vessel. In other words, the final Office action's alleged motivation to combine the references relies on solving an apparently nonexistent problem.

Second, Reiser explicitly teaches away from any combination with Gonjo. As discussed above, Reiser teaches using a pressure vessel to contain the leaking reactants/products. In other words, Reiser specifically teaches that, "[t]he seals 29 [between the manifold and stack sides] are not gas tight."⁵ Reiser's deliberate leakage is precisely the opposite circumstance of that taught by Gonjo. Gonjo teaches away from having gaseous leaks, such as those embraced by Reiser. Gonjo discloses that leakage is preventable and uses high compression bonding to address this problem, while Reiser intentionally adopts leakage, but discloses using a pressure vessel to contain the leakage. Obviously, if one were to inhibit leakage as taught by Gonjo, one would not be motivated to use the leaking structure of Reiser.

³ Final Office action, p. 4.

⁴ Gonjo, col. 13, ll. 22-23.

⁵ GB 2 128 013, p. 1, l. 124.

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Third, modifying Gonjo to incorporate the teachings of Reiser as proposed in the final Office action would impermissibly require changing its principle of operation or, alternatively, would render Gonjo's teachings unsatisfactory for their intended purpose. Specifically, Gonjo teaches a sealed reactor providing internal flowpaths for two completely fluidically separate streams. Reiser teaches a device in which the reactor intentionally allows leakage within a pressure vessel. If the Gonjo's reactor was modified to incorporate the teachings of Reiser, an intentionally leaky reactor within a pressure vessel, Gonjo's sealed flowpaths would be subject to cross contamination and mixing.⁶ As Gonjo's device relies on the separation of the flowpaths, such a hypothetical combination device would either require changing the principle of operation (to allow cross-connected internal flowpaths) or would simply be rendered unsatisfactory for its intended purpose, which includes the utilization of two internally separate flowpaths. In either case, such a combination is insufficient to establish a *prima facie* case of obviousness.⁷

Accordingly, it is respectfully asserted that claim 1 and the claims depending therefrom are patentable over the cited combination of references for at least these reasons.

Claim 17

Claim 17 has been amended herein to require, inter alia, a first microchannel module and a second microchannel module fluidically arranged in parallel, each including two sets of microchannels fluidically isolated from the interior of the pressure vessel. Neither Gonjo nor Reiser discloses these elements.

In addition, claim 17 has been amended herein to require, inter alia, a hydrocarbon manifold via which the first set of microchannels and second set of

⁶ Notably, although Reiser uses the term "inert gas" to describe the pressurized gas delivered to the pressure vessel, he explicitly defines it to mean merely "a gas having no constituents which are present in sufficient amounts to be harmfully reactive to the stack components." In addition, it is notable that Reiser's "inert gas" supplied to the pressure vessel includes a necessary reactant in the exemplary process (carbon dioxide).

⁷ See M.P.E.P § 2143, subsection V ("THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE") and subsection VI ("THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE").

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microchannels are in fluid communication with the hydrocarbon conduit. Neither Gonjo nor Reiser discloses this element.

For the reasons discussed above with regard to claim 1, the cited references are not properly combinable. Accordingly, it is respectfully asserted that claim 17 and the claims depending therefrom are patentable over the cited references for at least these reasons.

Gonjo In View Of Reiser And Further In View Of Toole

Claims 13-15, 32, 48, 53, 54, 58, and 71-73 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Gonjo in view of Reiser and further in view of U.S. Patent No. 4,167,915 to Toole et al ("Toole"). This ground of rejection has been fully addressed by the amendments to claims 1 and 17. The addition of Toole to the combination of Gonjo and Reiser does not cure the deficiencies discussed above.

Further, Toole is not properly combinable with Gonjo and/or Reiser. Unlike Gonjo and Reiser, Toole discloses a batch process. One skilled in the art would not be motivated to combine the continuous process structures of Gonjo and Reiser with the batch process structure of Toole. Batch processes, at least to Toole, require opening both the housing 5 and the vessel 11 to insert the silicon wafers, followed by carrying out the process, followed by opening both the housing 5 and the vessel 11 to extract the wafers. There is simply no motivation to look to a batch process when confronted with problems of a continuous process. By combining the batch process of Toole with the continuous process of Gonjo and/or Reiser, the resulting combination would render Toole unfit for its intended purpose. For this reason alone, the combination is impermissible.

Also, as discussed above, Gonjo and Reiser are not properly combinable. In fact, Reiser teaches away from Gonjo and vice versa. Accordingly, this ground of rejection must fail for these reasons alone. Reconsideration and withdrawal of the rejections of record as to claims 13-15, 32, 48, 53, 54, 58, and 71-73 are respectfully requested.

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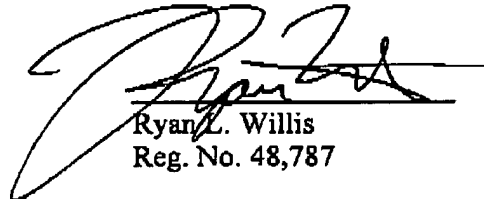
Conclusion

In light of the foregoing, it is respectfully submitted that claims 1, 7-9, 11-15, 17, 18, 20, 22, 26, 29, 31-33, 48, 53, 54, 57, 58, 61, 62, 64, 66, 68-74, and 97-110, now pending, are patentably distinct from the references cited and are in condition for allowance. Reconsideration and withdrawal of the rejections and objection of record are respectfully requested.

The Commissioner for Patents is hereby authorized to charge any additional fees that may be required by this paper, or to credit any overpayment to Deposit Account 50-3072.

In the event that the Examiner wishes to discuss any aspect of this response, please contact the undersigned at the telephone number indicated below.

Respectfully submitted,


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